```
   1 CCTCTGAAGG TTCTAGAATC GATAGTGAAT TCGTGGGACG GGAAGAGGAA
  51 GCACTGCCTT TACTTCAGTG GGAATCTCGG CCTCAGCCTG CAAGCCAAGT
 101 GTTCACAGTG AAAAAAGCAA GAGAATAAGC TAATACTCCT GTCCTGAACA
 151 AGGCAGCGGC TCCTTGGTAA AGCTACTCCT TGATCGATCC TTTGCACCGG
 201 ATTGTTCAAA GTGGACCCCA GGGGAGAAGT CGGAGCAAAG AACTTACCAC
 251 CAAGCAGTCC AAGAGGCCCA GAAGCAAACC TGGAGGTGAG ACCCAAAGAA
 301 AGCTGGAACC ATGCTGACTT TGTACACTGT GAGGACACAG AGTCTGTTCC
 351 TGGAAAGCCC AGTGTCAACG CAGATGAGGA AGTCGGAGGT CCCCAAATCT
 401 GCCGTGTATG TGGGGACAAG GCCACTGGCT ATCACTTCAA TGTCATGACA
 451 TGTGAAGGAT GCAAGGGCTT TTTCAGGAGG GCCATGAAAC GCAACGCCCG
 501 GCTGAGGTGC CCCTTCCGGA AGGGCGCCTG CGAGATCACC CGGAAGACCC
 551 GGCGACAGTG CCAGGCCTGC CGCCTGCGCA AGTGCCTGGA GAGCGGCATG
 601 AAGAAGGAGA TGATCATGTC CGACGAGGCC GTGGAGGAGA GGCGGGCCTT
 651 GATCAAGCGG AAGAAAAGTG AACGGACAGG GACTCAGCCA CTGGGAGTGC
 701 AGGGGCTGAC AGAGGAGCAG CGGATGATGA TCAGGGAGCT GATGGACGCT
 751 CAGATGAAAA CCTTTGACAC TACCTTCTCC CATTTCAAGA ATTTCCGGCT
 801 GCCAGGGGTG CTTAGCAGTG GCTGCGAGTT GCCAGAGTCT CTGCAGGCCC
 851 CATCGAGGGA AGAAGCTGCC AAGTGGAGCC AGGTCCGGAA AGATCTGTGC
 901 TCTTTGAAGG TCTCTCTGCA GCTGCGGGGG GAGGATGGCA GTGTCTGGAA
 951 CTACAAACCC CCAGCCGACA GTGGCGGGAA AGAGATCTTC TCCCTGCTGC
1001 CCCACATGGC TGACATGTCA ACCTACATGT TCAAAGGCAT CATCAGCTTT
1051 GCCAAAGTCA TCTCCTACTT CAGGGACTTG CCCATCGAGG ACCAGATCTC
1101 CCTGCTGAAG GGGGCCGCTT TCGAGCTGTG TCAACTGAGA TTCAACACAG
1151 TGTTCAACGC GGAGACTGGA ACCTGGGAGT GTGGCCGGCT GTCCTACTGC
1201 TTGGAAGACA CTGCAGGTGG CTTCCAGCAA CTTCTACTGG AGCCCATGCT
1251 GAAATTCCAC TACATGCTGA AGAAGCTGCA GCTGCATGAG GAGGAGTATG
1301 TGCTGATGCA GGCCATCTCC CTCTTCTCCC CAGACCGCCC AGGTGTGCTG
1351 CAGCACCGCG TGGTGGACCA GCTGCAGGAG CAATTCGCCA TTACTCTGAA
1401 GTCCTACATT GAATGCAATC GGCCCCAGCC TGCTCATAGG TTCTTGTTCC
```

Fig. 1

1451 TGAAGATCAT GGCTATGCTC ACCGAGCTCC GCAGCATCAA TGCTCAGCAC
1501 ACCCAGCGGC TGCTGCGCAT CCAGGACATA CACCCCTTTG CTACGCCCCT
1551 CATGCAGGAG TTGTTCGGCA TCACAGGTAG CTGAGCGGCT GCCCTTGGGT
1601 GACACCTCCG AGAGGCAGCC AGACCCAGAG CCCTCTGAGC CGCCACTCCC
1651 GGGCCAAGAC AGATGGACAC TGCCAAGAGC CGACAATGCC CTGCTGGCCT
1701 GTCTCCCTAG GGAATTCCTG CTATGACAGC TGGCTAGCAT TCCTCAGGAA
1751 GGACATGGGT GCCCCCCACC CCCAGTTCAG TCTGTAGGGA GTGAAGCCAC
1801 AGACTCTTAC GTGGAGAGTG CACTGACCTG TAGGTCAGGA CCATCAGAGA
1851 GGCAAGGTTG CCCTTTCCTT TTAAAAGGCC CTGTGGTCTG GGGAGAAATC
1901 CCTCAGATCC CACTAAAGTG TCAAGGTGTG GAAGGGACCA AGCGACCAAG
1951 GATAGGCCAT CTGGGGTCTA TGCCCACATA CCCACGTTTG TTCGCTTCCT
2001 GAGTCTTTTC ATTGCTACCT CTAATAGTCC TGTCTCCCAC TTCCCACTCG
2051 TTCCCCTCCT CTTCCGAGCT GCTTTGTGGG CTCAAGGCCT GTACTCATCG
2101 GCAGGTGCAT GAGTATCTGT GGGAGTCCTC TAGAGAGATG AGAAGCCAGG
2151 AGGCCTGCAC CAAATGTCAG AAGCTTGGCA TGACCTCATT CCGGCCACAT
2201 CATTCTGTGT CTCTGCATCC ATTTGAACAC ATTATTAAGC ACTGATAATA
2251 GGTAGCCTGC TGTGGGGTAT ACAGCATTGA CTCAGATATA GATCCTGAGC
2301 TCACAGAGTT TATAGTTAAA AAAACAAACA GAAACACAAA CAATTTGGAT
2351 CAAAAGGAGA AAATGATAAG TGACAAAAGC AGCACAAGGA ATTTCCCTGT
2401 GTGGATGCTG AGCTGTGATG GCAGGCACTG GGTACCCAAG TGAAGGTTCC
2451 CGAGGACATG AGTCTGTAGG AGCAAGGGCA CAAACTGCAG CTGTGAGTGC
2501 GTGTGTGTGA TTTGGTGTAG GTAGGTCTGT TTGCCACTTG ATGGGGCCTG
2551 GGTTTGTTCC TGGGGCTGGA ATGCTGGGTA TGCTCTGTGA CAAGGCTACG
2601 CTGACAATCA GTTAAACACA CCGGAGAAGA ACCATTTACA TGCACCTTAT
2651 ATTTCTGTGT ACACATCTAT TCTCAAAGCT AAAGGGTATG AAAGTGCCTG
2701 CCTTGTTTAT AGCCACTTGT GAGTAAAAAT TTTTTTGCAT TTTCACAAAT
2751 TATACTTTAT ATAAGGCATT CCACACCTAA GAACTAGTTT TGGGAAATGT
2801 AGCCCTGGGT TTAATGTCAA ATCAAGGCAA AAGGAATTAA ATAATGTACT
2851 TTTGGCTAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA AAAAAAAAAA
2901 AAAAA

Fig. 1 (cont.)

Evolutionary Neighbour-Joining Tree

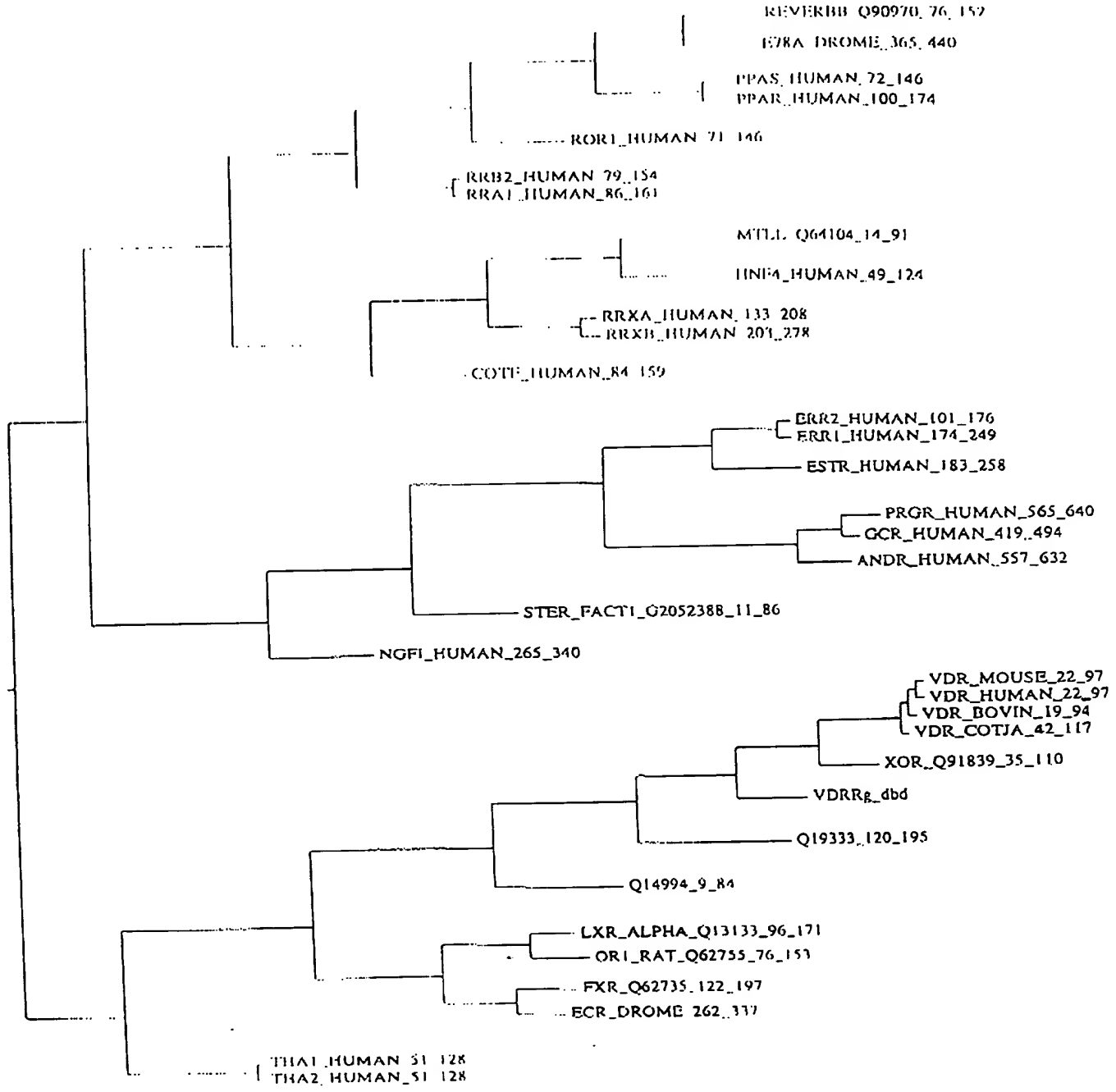
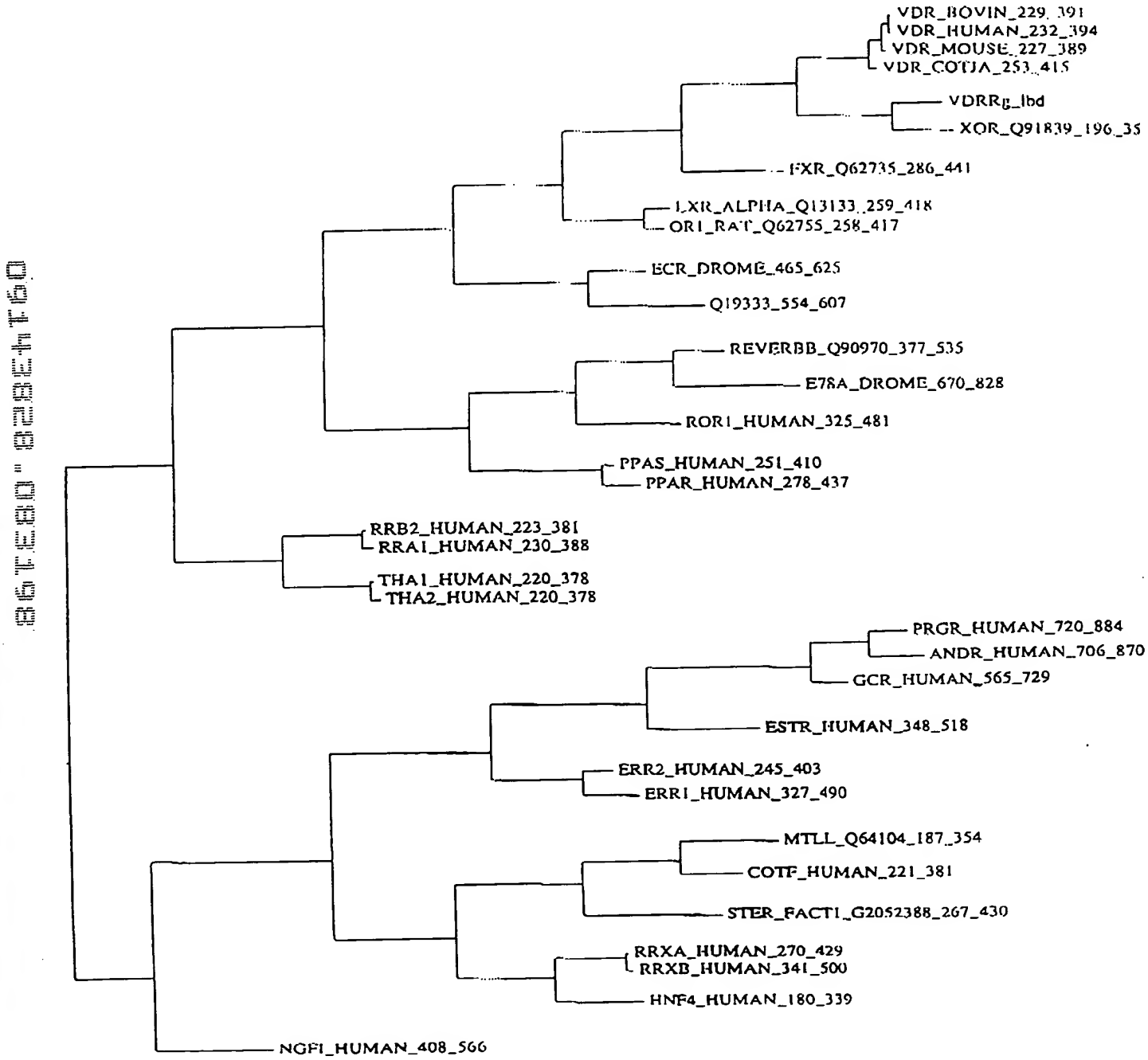


Fig. 2

Evolutionary Neighbour-Joining Tree



1 MEVRPKESWN HADFVHCEDT ESVPGKPSVN ADEEVGGPQI CRVCGDKATG

51 YHFNVMTCEG CKGFFRRAMK RNARLRCPFR KGACEITRKT RRQCQACRLR

101 KCLESGMKKE MIMSDEAVEE RRALIKRKKS ERTGTQPLGV QGLTEEQRMM

151 IRELMDAQMK TFDTTFSHFK NFRLPGVLSS GCELPESLQA PSREEAAKWS

201 QVRKDLCSLK VSLQLRGEDG SVWNYKPPAD SGGKEIFSLL PHMADMSTYM

251 FKGIISFAKV ISYFRDLPIE DQISLLKGAA FELCQLRFNT VFNAETGTWE

301 CGRLSYCLED TAGGFQQLLL EPMLKFHYML KKLQLHEEEY VLMQAISLFS

351 PDRPGVLQHR VVDQLQEQFA ITLKSYIECN RPQPAHRFLF LKIMAMLTEL

401 RSINAQHTQR LLRIQDIHPF ATPLMQELFG ITGS

Fig. 4

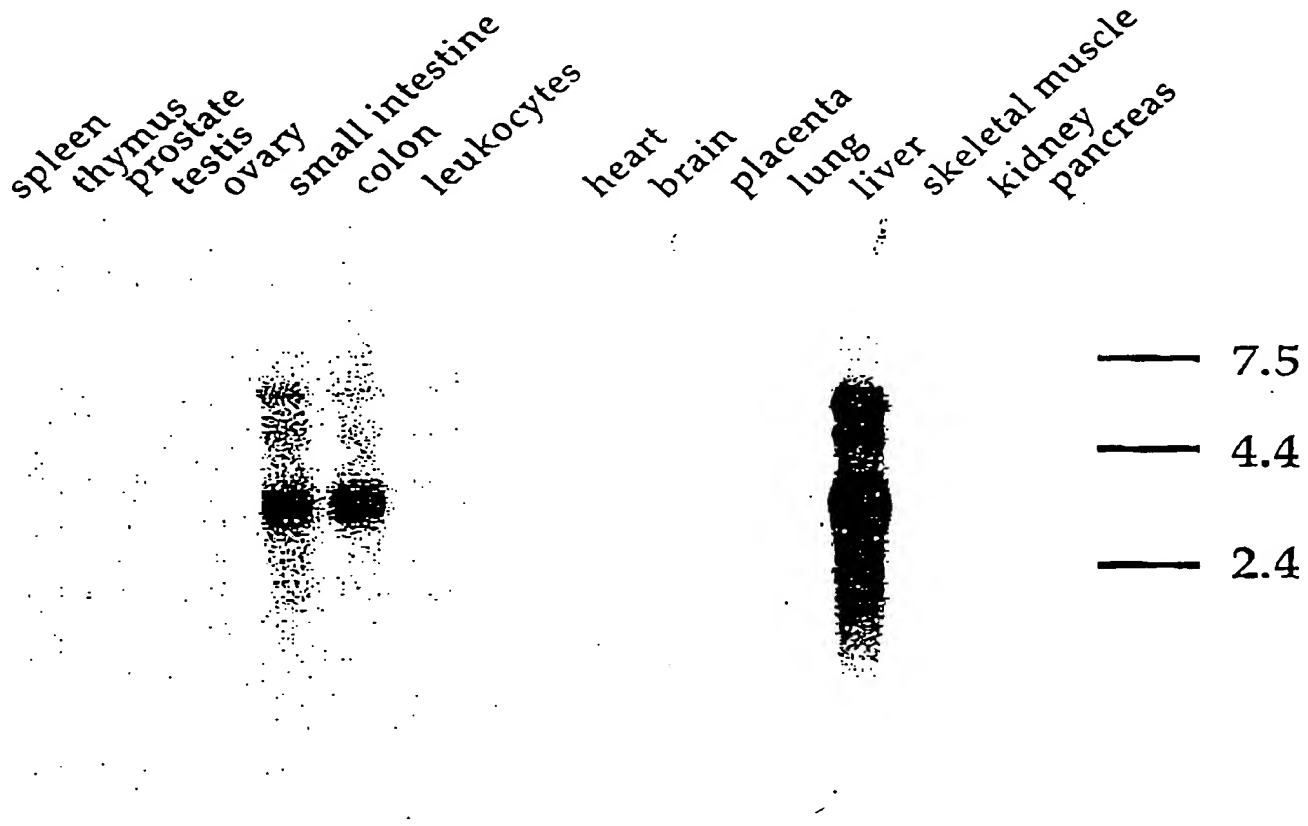
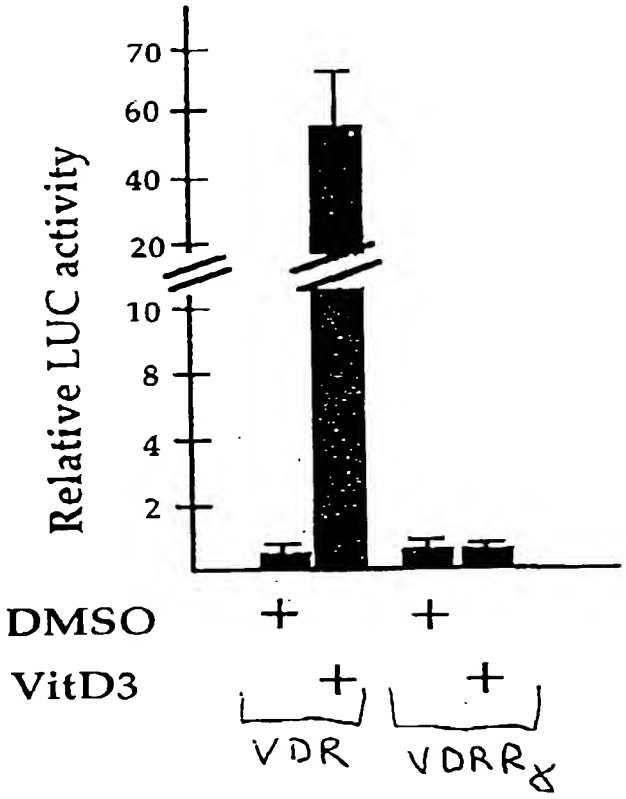

spleen
thymus
prostate
testis
ovary
small intestine
colon
leukocytes
heart
brain
placenta
lung
liver
skeletal muscle
kidney
pancreas
7.5
4.4
2.4

Fig. 5


Relative LUC activity
70
60
40
20
10
8
4
2
DMSO
VitD3
+
+
+
+
VDR
VDRRγ

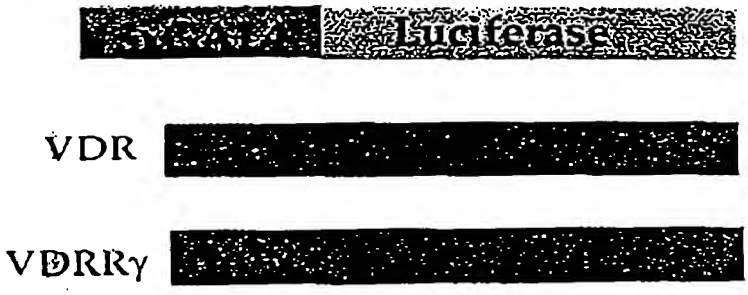

Luciferase
VDR
VDRRγ

Fig. 6

TGAATTCGTGGGCCTGCTGGGTTAGTGCTGGCAGCCCCCC 40
TGAGGCCAAGGACAGCAGCATGACAGTCACCAGGACTCAC 80
CACTTCAAGGAGGGGTCCCTCAGAGCACCTGCCATACCCC 120
TGCACAGTGCTGCGGCTGAGTTGGCTTCAAACCATCCAAG 160
AGGCCCAGAAGCAAACCTGGAGGTGAGACCCAAAGAAAGC 200
TGGAACCATGCTGACTTTGTACACTGTGAGGACACAGAGT 240
CTGTTCCTGGAAAGCCCAGTGTCAACGCAGATGAGGAAGT 280
CGGAGGTCCCCAAATCTGCCGTGTATGTGGGGACAAGGCC 320
ACTGGCTATCACTTCAATGTCATGACATGTGAAGGATGCA 360
AGGGCTTTTTCAGGAGGGCCATGAAACGCAACGCCCGGCT 400
GAGGTGCCCCTTCCGGAAGGGCGCCTGCGAGATCACCCGG 440
AAGACCCGGCGACAGTGCCAGGCCTGCCGCCTGCGCAAGT 480
GCCTGGAGAGCGGCATGAAGAAGGAGATGATCATGTCCGA 520
CGAGGCCGTGGAGGAGAGGCGGGCCTTGATCAAGCGGAAG 560
AAAAGTGAACGGACAGGGACTCAGCCACTGGGAGTGCAGG 600
GGCTGACAGAGGAGCAGCGGATGATGATCAGGGAGCTGAT 640
GGACGCTCAGATGAAAACCTTTGACACTACCTTCTCCCAT 680
TTCAAGAATTTCCGGCTGCCAGGGGTGCTTAGCAGTGGCT 720
GCGAGTTGCCAGAGTCTCTGCAGGCCCCATCGAGGGAAGA 760
AGCTGCCAAGTGGAGCCAGGTCCGGAAAGATCTGTGCTCT 800
TTGAAGGTCTCTCTGCAGCTGCGGGGGGGAGGATGGCAGTG 840
TCTGGAACTACAAACCCCCAGCCGACAGTGGCGGGAAAGA 880
GATCTTCTCCCTGCTGCCCCACATGGCTGACATGTCAACC 920
TACATGTTCAAAGGCATCATCAGCTTTGCCAAAGTCATCT 960
CCTACTTCAGGGACTTGCCCATCGAGGACCAGATCTCCCT 1000
GCTGAAGGGGGCCGCTTTCGAGCTGTGTCAACTGAGATTC 1040
AACACAGTGTTCAACGCGGAGACTGGAACCTGGGAGTGTG 1080
GCCGGCTGTCCTACTGCTTGGAAGACACTGCAGGTGGCTT 1120
CCAGCAACTTCTACTGGAGCCCATGCTGAAATTCCACTAC 1160
ATGCTGAAGAAGCTGCAGCTGCATGAGGAGGAGTATGTGC 1200
TGATGCAGGCCATCTCCCTCTTCTCCCCAGACCGCCCAGG 1240
TGTGCTGCAGCACCGCGTGGTGGACCAGCTGCAGGAGCAA 1280
TTCGCCATTACTCTGAAGTCCTACATTGAATGCAATCGGC 1320
CCCAGCCTGCTCATAGGTTCTTGTTCCTGAAGATCATGGC 1360
TATGCTCACCGAGCTCCGCAGCATCAATGCTCAGCACACC 1400
CAGCGGCTGCTGCGCATCCAGGACATACACCCCTTTGCTA 1440

Fig. 7

CGCCCCTCATGCAGGAGTTGTTCGGCATCACAGGTAGCTG 1480
AGCGGCTGCCCTTGGGTGACACCTCCGAGAGGCAGCCAGA 1520
CCCAGAGCCCTCTGAGCCGCCACTCCCGGGCCAAGACAGA 1560
TGGACACTGCCAAGAGCCGACAATGCCCTGCTGGCCTGTC 1600
TCCCTAGGGAATTCCTGCTATGACAGCTGGCTAGCATTCC 1640
TCAGGAAGGACATGGGTGCCCCCCACCCCCAGTTCAGTCT 1680
GTAGGGAGTGAAGCCACAGACTCTTACGTGGAGAGTGCAC 1720
TGACCTGTAGGTCAGGACCATCAGAGAGGCAAGGTTGCCC 1760
TTTCCTTTTAAAAGGCCCTGTGGTCTGGGGAGAAATCCCT 1800
CAGATCCCACTAAAGTGTCAAGGTGTGGAAGGGACCAAGC 1840
GACCAAGGATAGGCCATCTGGGGTCTATGCCCACATACCC 1880
ACGTTTGTTCGCTTCCTGAGTCTTTTCATTGCTACCTCTA 1920
ATAGTCCTGTCTCCCACTTCCCACTCGTTCCCCTCCTCTT 1960
CCGAGCTGCTTTGTGGGCTCAAGGCCTGTACTCATCGGCA 2000
GGTGCATGAGTATCTGTGGGAGTCCTCTAGAGAGATGAGA 2040
AGCCAGGAGGCCTGCACCAAATGTCAGAAGCTTGGCATGA 2080
CCTCATTCCGGCCACATCATTCTGTGTCTCTGCATCCATT 2120
TGAACACATTATTAAGCACTGATAATAGGTAGCCTGCTGT 2160
GGGGTATACAGCATTGACTCAGATATAGATCCTGAGCTCA 2200
CAGAGTTTATAGTTAAAAAAACAAACAGAAACACAAACAA 2240
TTTGGATCAAAAGGAGAAAATGATAAGTGACAAAAGCAGC 2280
ACAAGGAATTTCCCTGTGTGGATGCTGAGCTGTGATGGCA 2320
GGCACTGGGTACCCAAGTGAAGGTTCCCGAGGACATGAGT 2360
CTGTAGGAGCAAGGGCACAAACTGCAGCTGTGAGTGCGTG 2400
TGTGTGATTTGGTGTAGGTAGGTCTGTTTGCCACTTGATG 2440
GGGCCTGGGTTTGTTCCTGGGGCTGGAATGCTGGGTATGC 2480
TCTGTGACAAGGCTACGCTGACAATCAGTTAAACACACCG 2520
GAGAAGAACCATTTACATGCACCTTATATTTCTGTGTACA 2560
CATCTATTCTCAAAGCTAAAGGGTATGAAAGTGCCTGCCT 2600
TGTTTATAGCCACTTGTGAGTAAAAATTTTTTTGCATTTT 2640
CACAAATTATACTTTATATAAGGCATTCCACACCTAAGAA 2680
CTAGTTTTGGGAAATGTAGCCCTGGGTTTAATGTCAAATC 2720
AAGGCAAAAGGAATTAAATAATGTACTTTTGGCTAAAAAA 2760
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA 2800
AA 2802

Fig. 7 (cont.)

```
MTVTRTHHFKEGSLRAPAIPLHSAAAELASNHPRGPEANL  40
EVRPKESWNHADFVHCEDTESVPGKPSVNADEEVGGPQIC  80
RVCGDKATGYHFNVMTCEGCKGFFRRAMKRNARLRCPFRK 120
GACEITRKTRRQCQACRLRKCLESGMKKEMIMSDEAVEER 160
RALIKRKKSERTGTQPLGVQGLTEEQRMMIRELMDAQMKT 200
FDTTFSHFKNFRLPGVLSSGCELPESLQAPSREEAAKWSQ 240
VRKDLCSLKVSLQLRGEDGSVWNYKPPADSGGKEIFSLLP 280
HMADMSTYMFKGIISFAKVISYFRDLPIEDQISLLKGAAF 320
ELCQLRFNTVFNAETGTWECGRLSYCLEDTAGGFQQLLLE 360
PMLKFHYMLKKLQLHEEEYVLMQAISLFSPDRPGVLQHRV 400
VDQLQEQFAITLKSYIECNRPQPAHRFLFLKIMAMLTELR 440
SINAQHTQRLLRIQDIHPFATPLMQELFGITGS.  474
```

Fig. 8

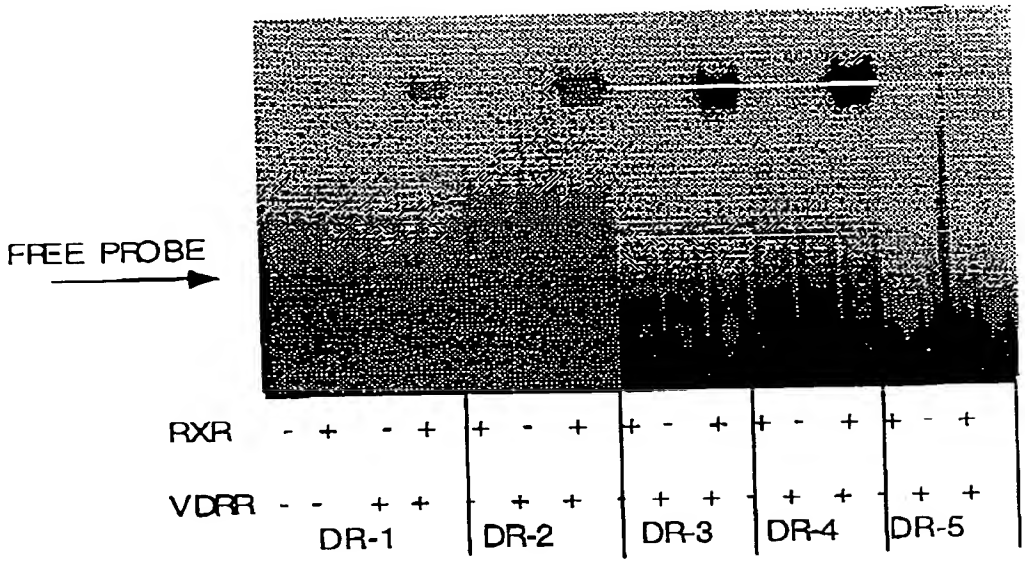


Fig. 9

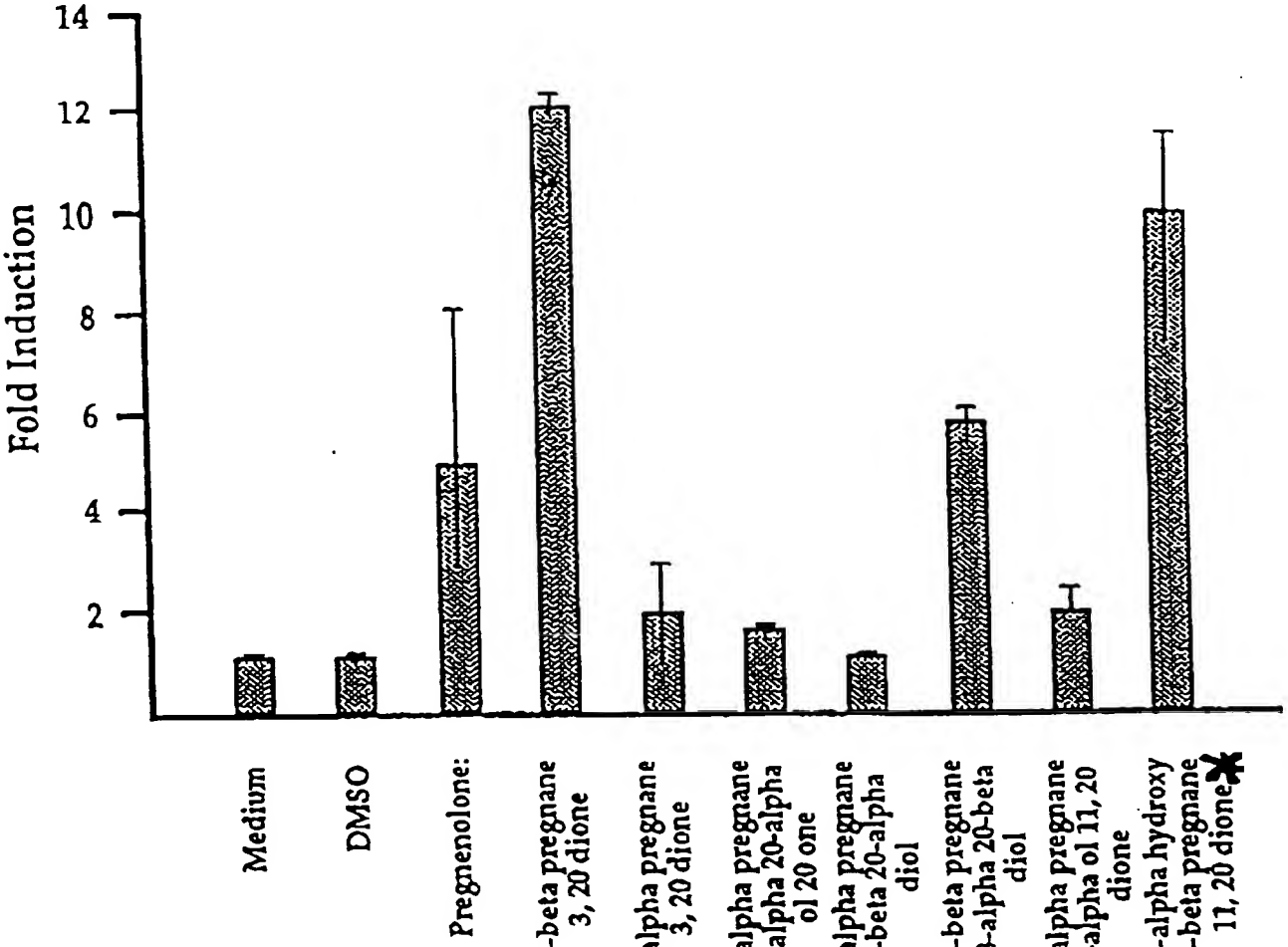

Fold Induction
14
12
10
8
6
4
2
Medium
DMSO
Pregnenolone:
5-beta pregnane 3, 20 dione
5-alpha pregnane 3, 20 dione
5-alpha pregnane 3-alpha 20-alpha ol 20 one
5-alpha pregnane 3-beta 20-alpha diol
5-beta pregnane 3-alpha 20-beta diol
5-alpha pregnane 3-alpha ol 11, 20 dione
3-alpha hydroxy 5-beta pregnane 11, 20 dione*

Fig. 10

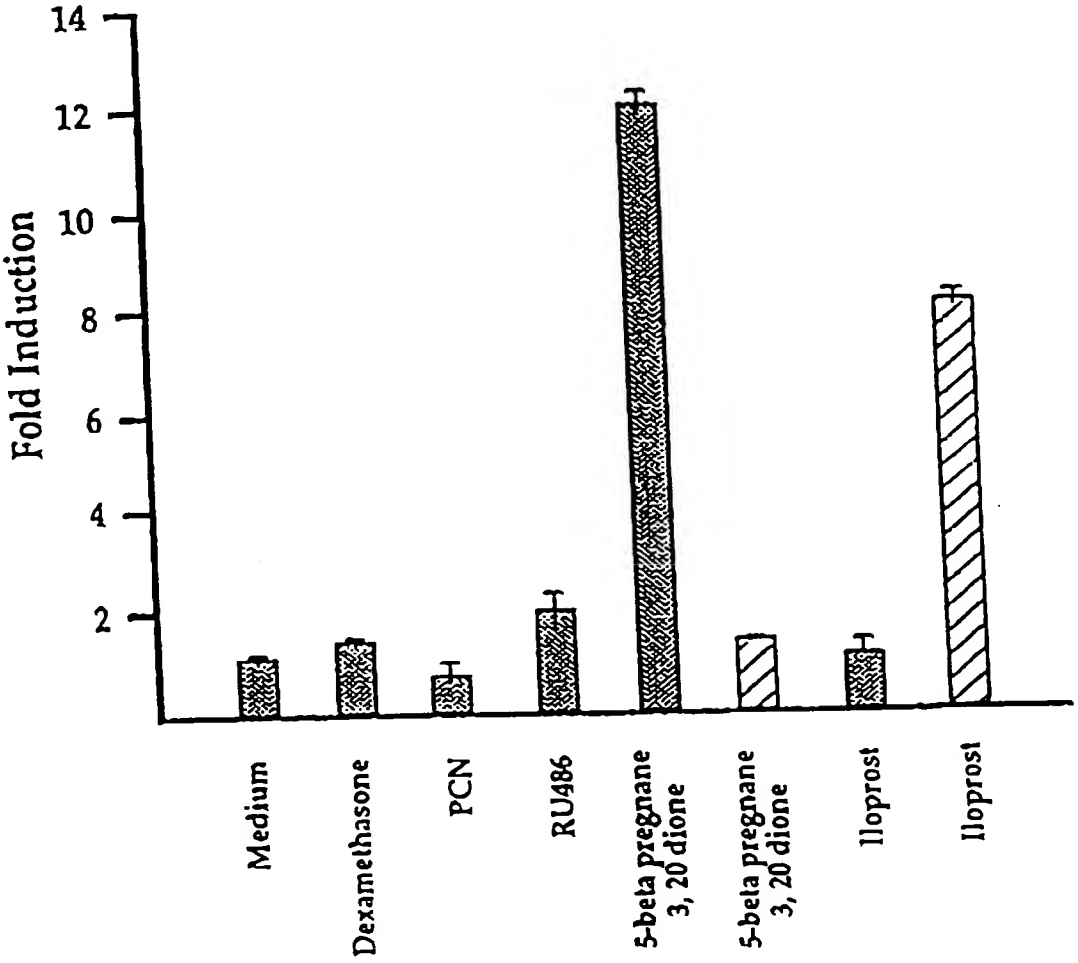

Fold Induction
14
12
10
8
6
4
2
Medium
Dexamethasone
PCN
RU486
5-beta pregnane 3, 20 dione
5-beta pregnane 3, 20 dione
Iloprost
Iloprost

Fig. 11

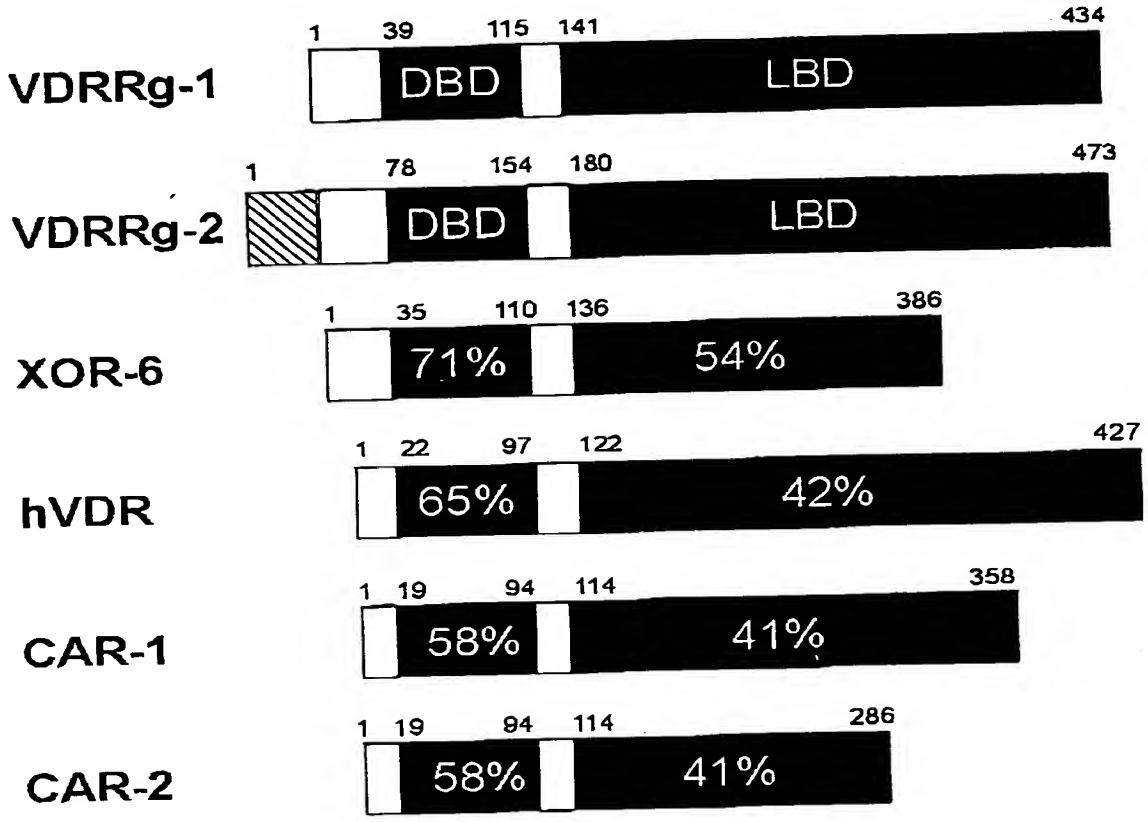

VDRRg-1
1
39
115
141
434
DBD
LBD
VDRRg-2
1
78
154
180
473
DBD
LBD
XOR-6
1
35
110
136
386
71%
54%
hVDR
1
22
97
122
427
65%
42%
CAR-1
1
19
94
114
358
58%
41%
CAR-2
1
19
94
114
286
58%
41%

Fig. 12

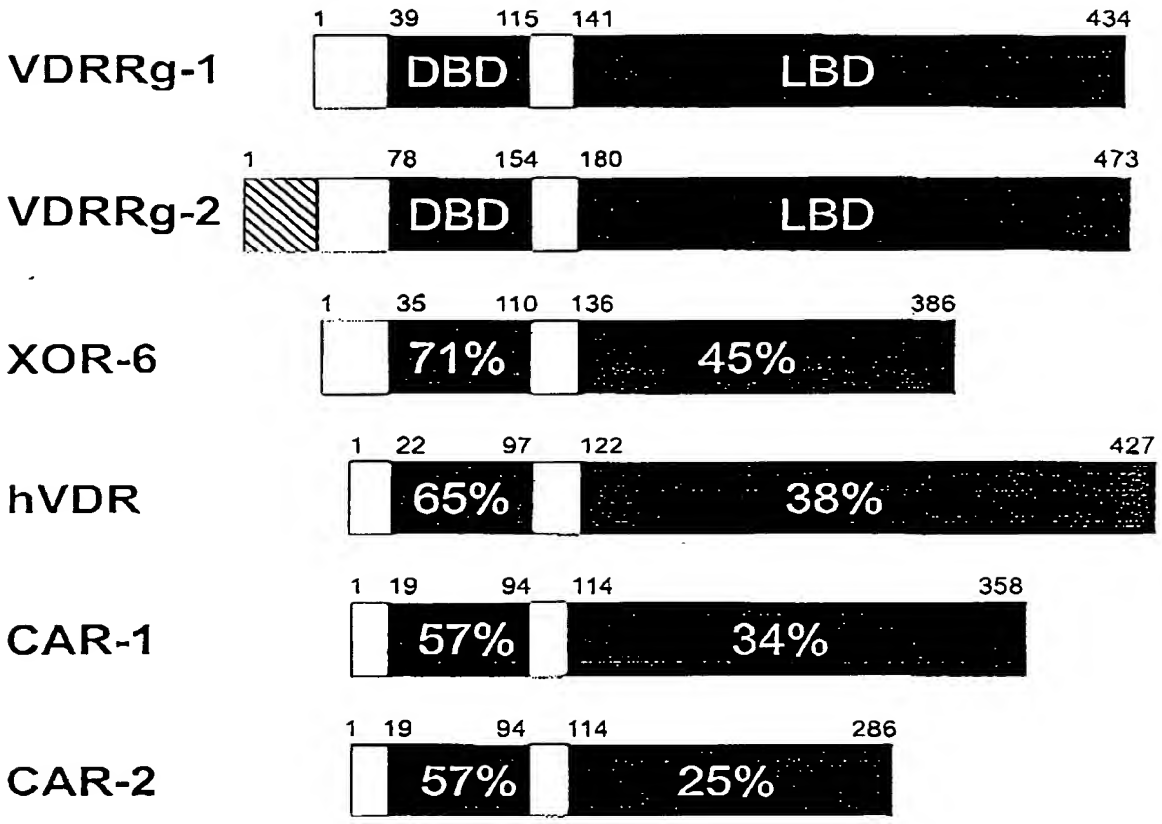


Fig. 13